DECISION DOCUMENTATION PACKAGE
COVER SHEET

prepared in accordance with

TRACK 1 SITES:
GUIDANCE FOR ASSESSING
LOW PROBABILITY HAZARD SITES
AT INEL

SITE DESCRIPTION: SEPTIC SYSTEMS
SITE ID: RWMC-01, -02, -03 OPERABLE UNIT: 7-11
WASTE AREA GROUP: 7

I. SUMMARY - PHYSICAL DESCRIPTION OF THE SITE:

This operable unit (OU), 7-11, consists of three septic tank systems at the Radioactive Waste Management Complex (RWMC). RWMC-01 [RWMC drainage and septic tank for Waste Management Facility (WMF)-613] consists of a 1,250-gal septic tank made of concrete and a drain field constructed of 4-in. perforated sewer pipe. RWMC-02 (RWMC septic tank and drain field for WMF-601, WMF-604, and WMF-620) consists of a 2,000-gal septic tank made of concrete and a drain field constructed of 4-in. perforated plastic drain tile. The RWMC-03 (RWMC septic tank and drain field for WMF-610 and WMF-617) consists of a 2,000-gal septic tank made of concrete and a drain field constructed of 4-in. perforated PVC pipes. RWMC-01, -02, and -03 are shown in Figures 1 to 3, respectively. Figure 4 shows the location of the INEL and RWMC. Cross referencing Figures 1, 2, 3, and 4 permits the readers to orient themselves spatially with respect to each septic system and the layout of the RWMC.

The RWMC-01 system receives sanitary waste discharges from WMF-613 (the WMF Office Building) and is located northwest of WMF-613 (see Figure 1). The building was constructed in 1986 and the septic system is assumed to have been connected and put into operation when the construction was completed.

The RWMC-02 system receives sanitary waste discharges from buildings WMF-601 (the Health Physics Office and lunch room), WMF-604 (the Bargaining Unit change and break building), and WMF-620 (Operations and Area Access Office) and is located northwest of WMF-601 and -604 (see Figure 2). The system is assumed to have been connected and put into operation in 1976 when the construction of WMF-601, the oldest building on this system, was completed. WMF-604 was built in 1977 and is assumed to have been tied into the septic system at that time. The drain field for the RWMC-02 system failed and was replaced in 1986. The new drain field was installed in the same location. WMF-620 was tied into the RWMC-02 septic system in 1991.

The RWMC-03 septic tank and drain field for WMF-610 [Stored Waste Experimental Pilot Plant (SWEPP)] receives sanitary waste discharges from WMF-610 (the SWEPP Building) and WMF-617 (Maintenance Office) and is located east of WMF-612 (Certified & Segregated Waste Storage Building) (see Figure 3). This septic system is assumed to have been connected and put into operation in 1985 when the construction of WMF-610, the oldest building on this system, was completed. WMF-617 was constructed in 1987, and is assumed to have been connected to the system at that time.

The three septic systems were addressed under the Consent Order and Compliance Agreement (COCA) in 1987 and subsequently received authorization for closure (see Kenneth D. Feigner letter in Appendix A). More recent sampling[1] due to Commitment Tracking System Item 7100-02919, a Tiger Team daily observation, detected no radiological contamination, and all toxicity characteristic leaching procedure (TCLP) constituents detected were below the regulatory limits. The maximum concentrations for the TCLP constituents detected from the liquid samples and the corresponding regulatory limits are summarized below.

Constituent detected in the liquid samples	Regulatory limit[2] (mg/L)	Maximum detected concentration[1] (mg/L)
Barium	100	not detected
Methylethyl ketone (2-butanone)	200	0.042
m & p cresols	200	0.49

Barium is included in the previous table because it was detected at 5 ppm from a solid sample. However, it is important to note the solid contents of the septic tanks are not typically transferred from the septic tanks to the drain fields due to the nature of operation of septic systems. Therefore, it can be assumed that most if not all of the barium remained in the tank until pumping (see Questions 1 and 2 in this report for additional details).

II. SUMMARY - QUALITATIVE ASSESSMENT OF RISK:

The sampling analysis results from the RWMC/SWEPP septic systems are regarded as reliable. The samples were sent by the EG&G Idaho, Inc., Environmental Monitoring Unit to the INEL Radiation Measurements Laboratory (RML) and VISTA Laboratories, Inc., for sample analysis. RML is a DOE-approved laboratory, and VISTA Laboratories, Inc., was audited and approved by a certified EG&G Idaho lead auditor. This analytical information was used to estimate the concentrations in soil of barium, m & p cresols, and methylethyl ketone. The risk-based concentrations derived for this report from the Track 1 risk analysis are higher than the estimated concentrations indicating the septic systems do not pose a significant risk. This information is summarized on the contaminant worksheet on page 16. Therefore, based on the risk analysis shown in Appendix B and summarized in the contaminant worksheet, the qualitative risk assessment is low.

DECISION RECOMMENDATION

III. SUMMARY - CONSEQUENCES OF ERROR:

If the decision is made in error to classify RWMC-01, RWMC-02, and RWMC-03 as requiring no further action, minimal possibility exists for contaminant migration to the groundwater and/or subsequent contaminant release. This statement is based on 1991 sampling results of the septic tanks, which indicate no radiological contamination exists and no TCLP constituents were present above regulatory limits. This is further explained within this report. The tanks have been pumped since the sampling, so the existence of a source can not be confirmed or denied.

Two possible consequences exist if the decision is made in error. First, if no cleanup action is taken erroneously, the undesirable consequences would be minimal because based on the sampling it is unlikely that significant contamination still exists given the fact that the tanks have been pumped recently and the concentrations of contaminants detected prior to pumping were small. Second, if cleanup action is taken in error even though the sample analysis shows little contamination, the benefits would be minimal relative to the associated cleanup costs because the risk evaluation indicates the detected contaminants do not pose a significant risk.

IV. SUMMARY - OTHER DECISION DRIVERS:

RWMC-01, -02, and -03 were addressed under the COCA and received authorization for closure in August 1987 (see Appendix A). This serves to support the following recommended action.

RECOMMENDED ACTION:

The sample analysis results from RML, a DOE-approved laboratory, and VISTA Laboratories, audited and approved by a certified EG&G Idaho lead auditor, are considered reliable. The qualitative risk assessment is low based on the Track 1 risk analysis. Based on the application of the qualitative risk and reliability evaluation table found on page 17 with respect to this Track 1 and the previous authorization for closure under COCA (see Appendix A), RWMC-01, -02, and -03 should be considered for classification as a "no action" status and be removed from the list of Idaho National Engineering Laboratory operable units. All three septic systems, which are currently in use, should remain under the jurisdiction of RWMC operations. Compliance under RCRA should prevent the septic systems from becoming contaminated in the future.

SIGNATURES	# PAGES:	DATE: 9-28-92
Prepared By: Scott Barrie	DOE WAG Manager:	
Approved By: D.L. Tolmes	Independent Review: Kirk L. Dooley	

NO FURTHER ACTION DETERMINATION

The U. S. Department of Energy, U. S. Environmental Protection Agency-Region 10 and the State of Idaho have completed a review of the referenced information for RWMC-01,-02,-03 hazardous site, as it pertains to the INEL Federal Facility Agreement of No Further Action. Based on this review, the Parties have determined that no further action for purposes of investigation or study is justified. This decision is subject to review at the time of issuance of the Record of Decision.

Brief Summary of the basis for no further action:

See Decision Statement

References:

TcK 1 pkg

DOE Project Manager _____ 1/7/93 date

EPA Project Manager _____ 1/7/93 date

Idaho Project Manager _____ 1/7/93 date

DECISION STATEMENT
(BY DOE RPM)

DATE RECD: 1/7/93 RUMC-01,02,03

DISPOSITION:

There is no evidence that hazardous substances exist in these septic tanks above levels that would pose a risk. No further action is recommended.

DATE: 1/7/93	# PAGES (DECISION STATEMENT):
NAME: Lisa Green for J Wyle	SIGNATURE: Lisa Green for JW

DECISION STATEMENT
(BY EPA RPM)

DATE RECD: 1/7/93 RWMC 01/02/03

DISPOSITION:

Three septic tanks sampled in '91 for rad and TCLP No rad detected and TCLP analysis was within acceptable limits. Contaminants detected in '91 (e.g, Ba, MEK & cresols) were pumped out afterwards. Disposal rate equivalent to production well rate ≅ 6,000 gpd Three tanks @ 1,250 gal; 2,000 gal; and 3,000 gal capacity. Although large volumes of H_2O discharged, no evidence of significant contaminant release. No further action is recommended. Other studies at RWMC will address ground water contamination, if any.

DATE: 1/7/93	# PAGES (DECISION STATEMENT):
NAME: Wayne Pierre	SIGNATURE: Wayne Pierre

DECISION STATEMENT
(BY STATE RPM)

DATE RECD: RWMC 01, 02, 03 1/7/93

DISPOSITION:

There is no evidence of hazardous substance disposal to RWMC 01, 02, 03. These sites were evaluated under the COCA at which time it was determined that this site does not pose an unacceptable risk to human health.

No further action is recommended

DATE: 1/7/92	**# PAGES (DECISION STATEMENT):**
NAME: Dean J. Nygard	**SIGNATURE:** Dean J. Nygard

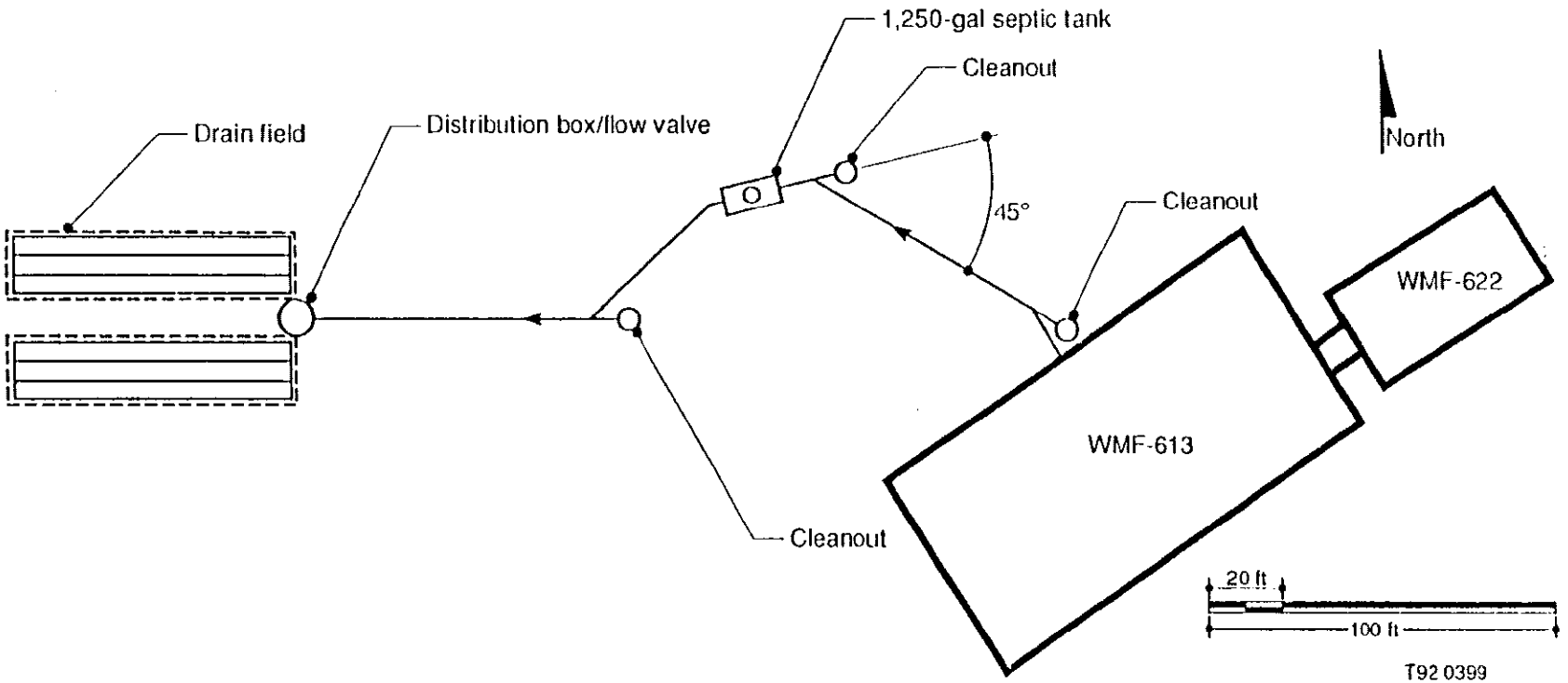


Figure 1. RWMC-01 septic system.

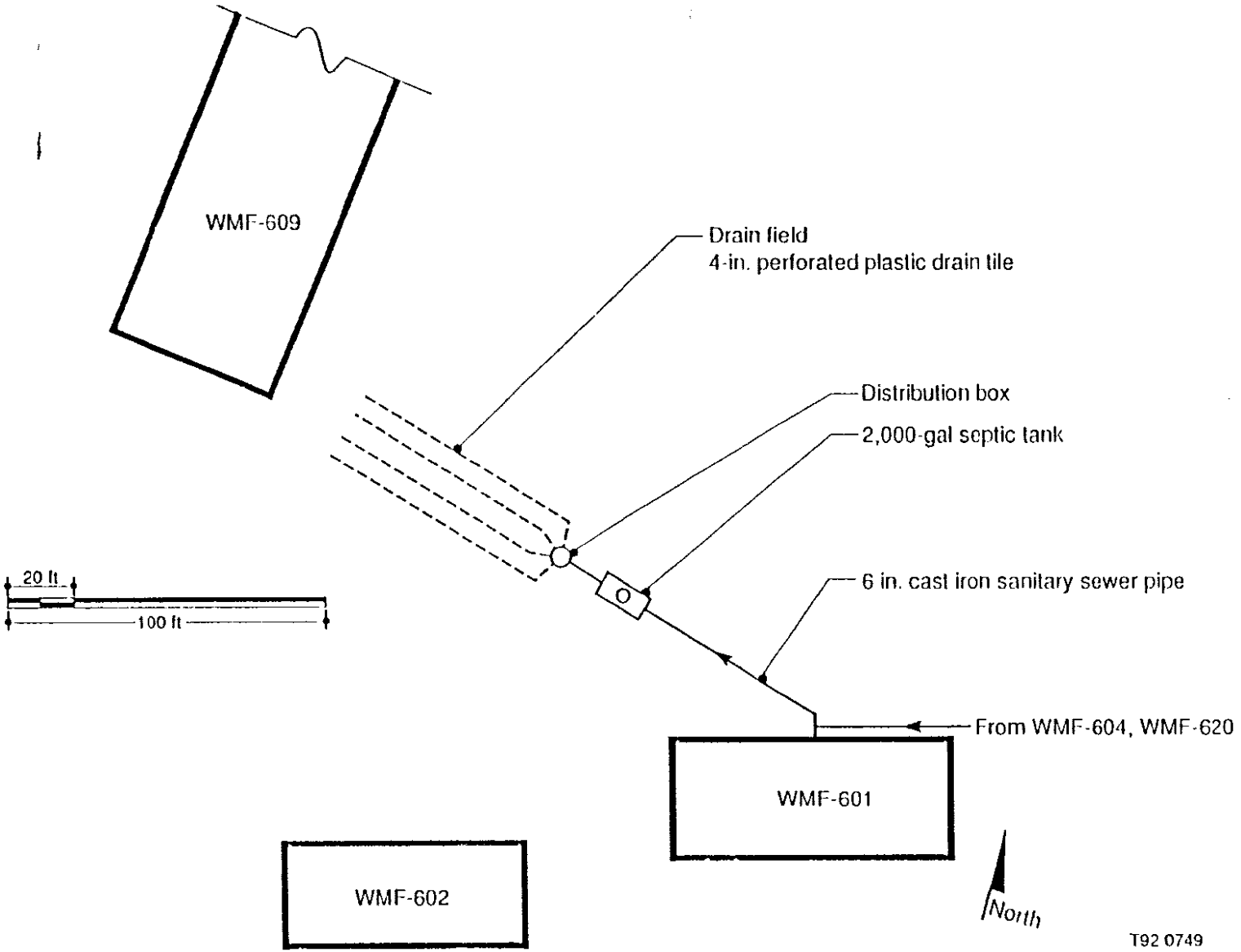


Figure 2. RWMC-02 septic system.

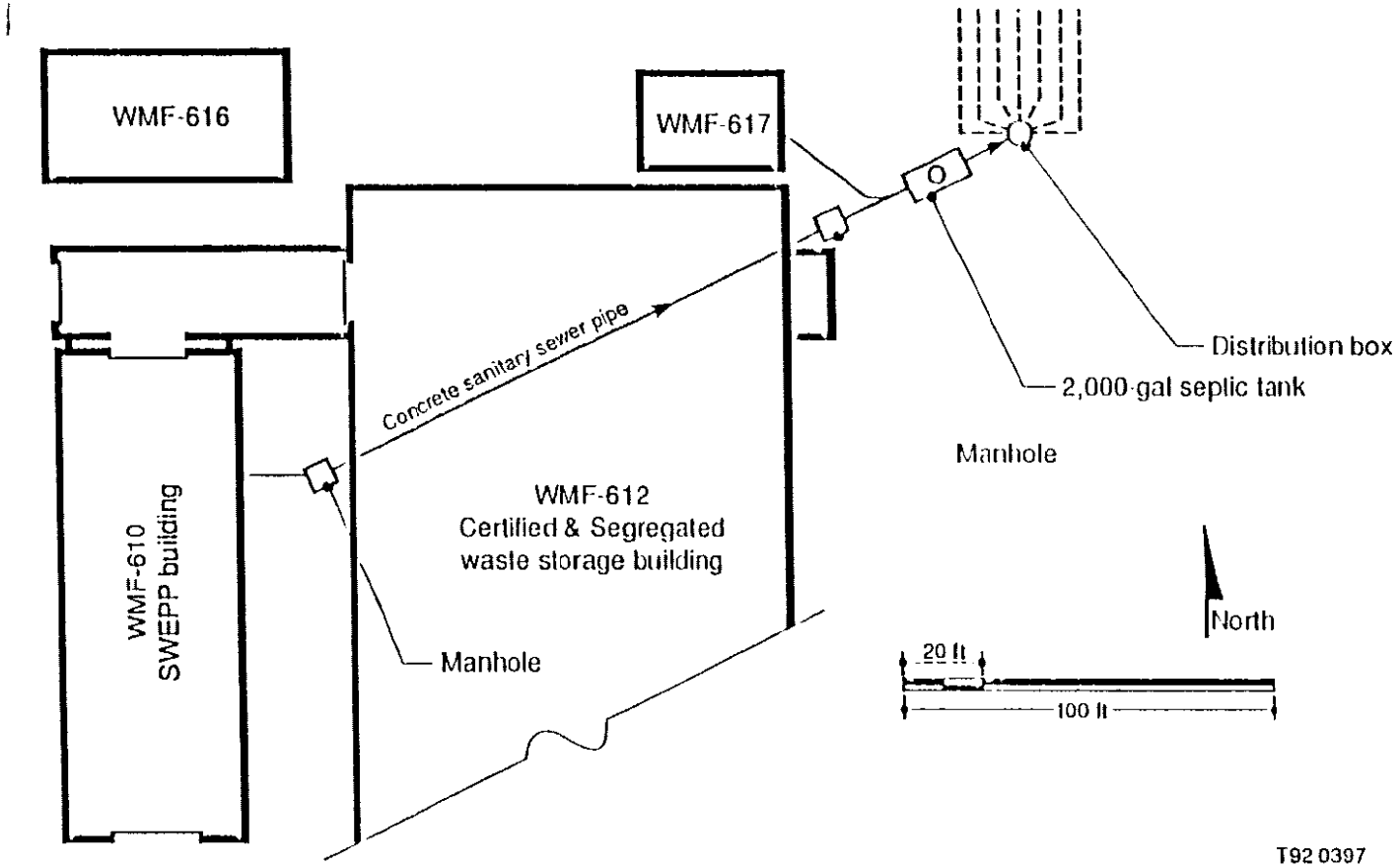


Figure 3. RWMC-03 septic system.

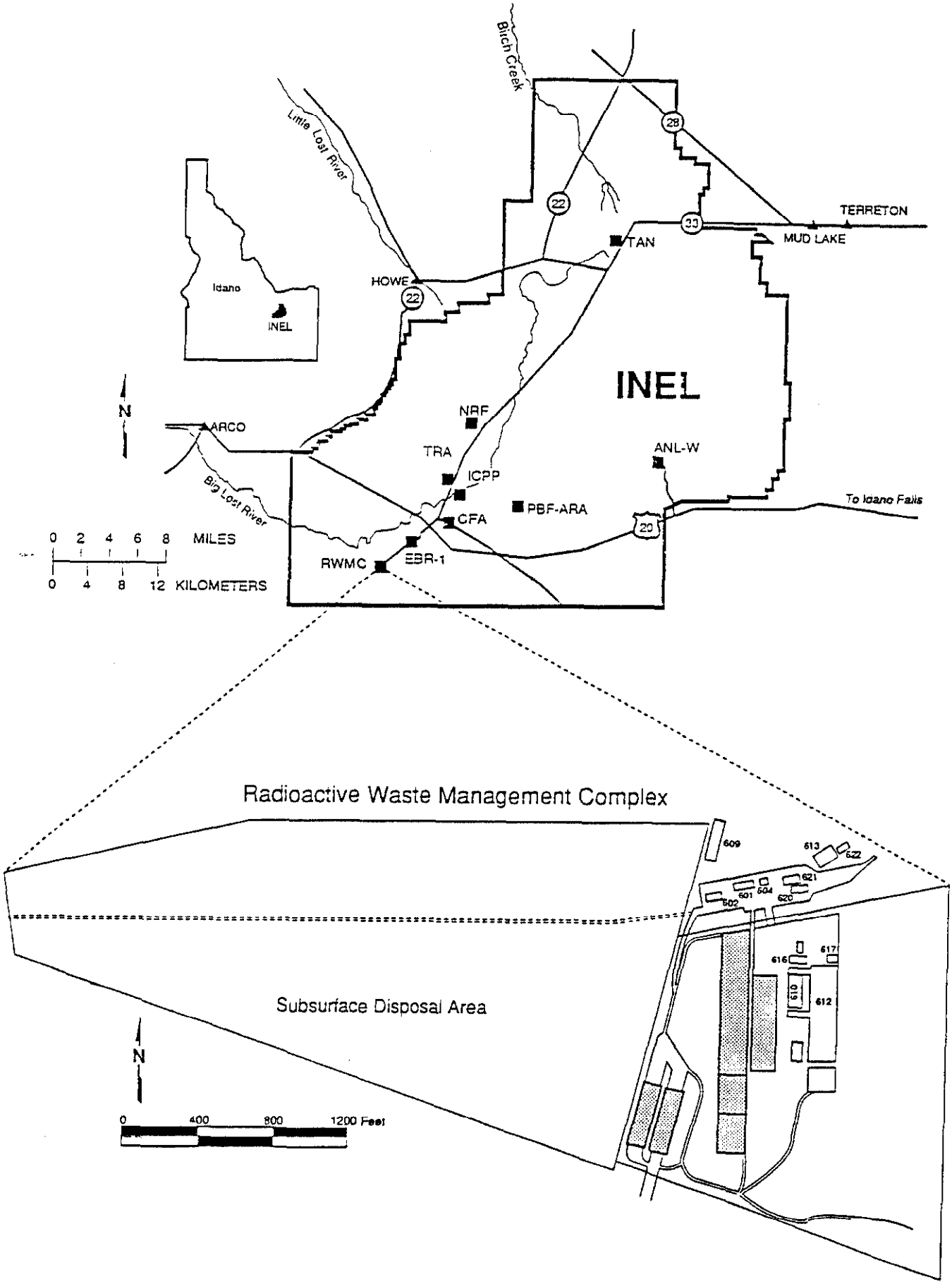


Figure 4. Radioactive Waste Management Complex.

T92 0413

PROCESS/WASTE WORKSHEET
SITE ID RWMC-01, RWMC-02 AND RWMC-03

Col 1 Processes Associated with this Site	Col 2 Waste Description & Handling Procedures	Col 3 Description & Location of any Artifacts/Structures/Disposal Areas Associated with this Waste or Process[a]
Underground Septic Systems (and related sinks, toilets, showers, drains, water fountains, etc.)	Sanitary Waste (Liquids, Solids)	Artifact: RWMC-01, RWMC drainage and septic tank for WMF-613 Location: Northwest of WMF-613 Description: 1,250-gal tank made of concrete and a 75-ft. drain field constructed of 4-in. perforated sewer pipe Artifact: RWMC-02, RWMC septic tank and drain field for WMF-601, -604, and -620 Location: Northwest of WMF-601 Description: 2,000-gal tank made of concrete and a 100-ft. drain field constructed of 4-in. perforated plastic drain tile Artifact: RWMC-03 RWMC septic tank and drain field for WMF-610 and WMF-617 Location: East of WMF-612 Description: 2,000-gal tank made of concrete and a 37.5-ft. drain field constructed of 4-in. perforated PVC pipes

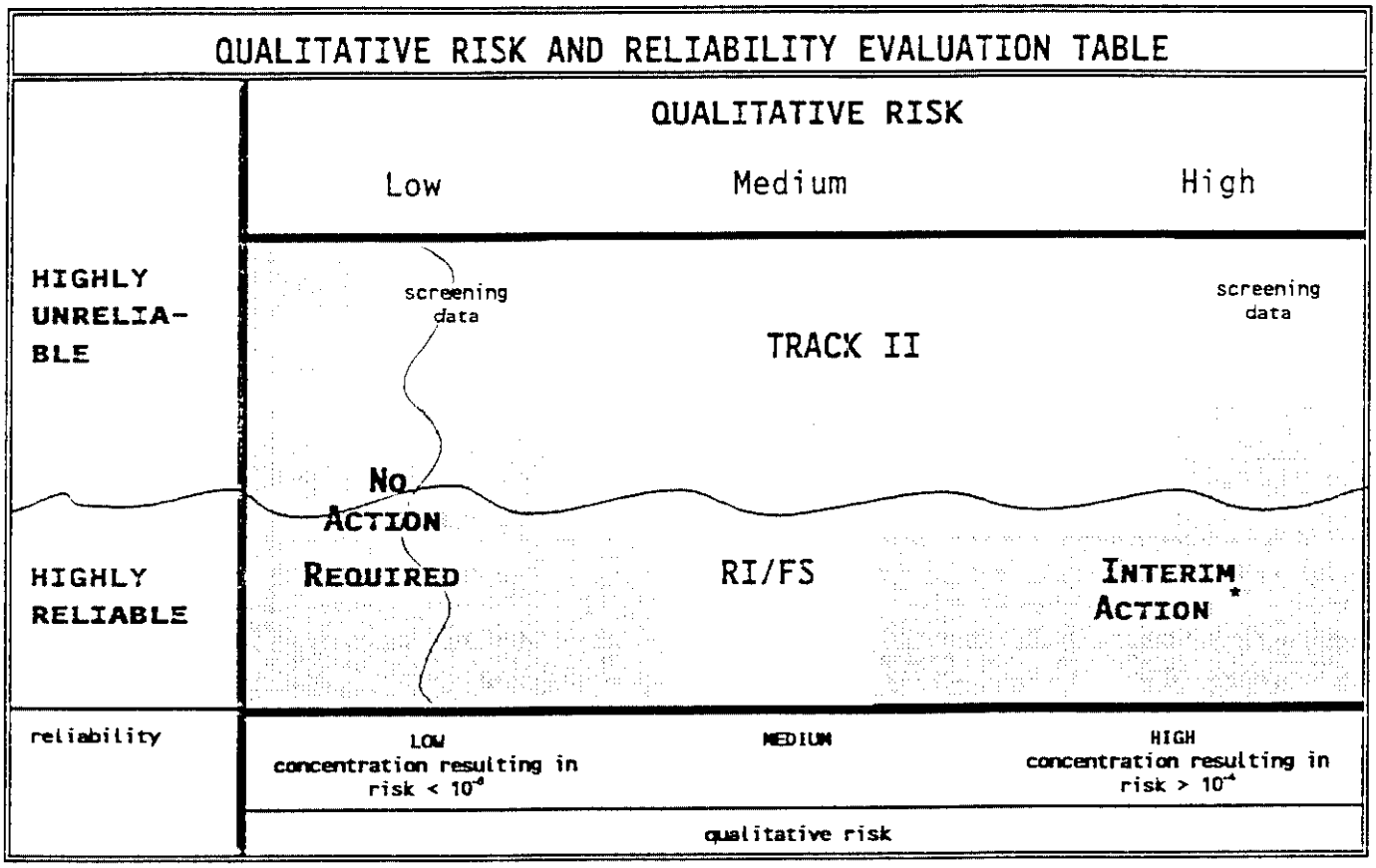
a. See question 1 for a discussion of equipment related to each septic system. See Figures 1 through 4 for the locations of each septic system relative to the buildings at the RWMC.

CONTAMINANT WORKSHEET
SITE ID RWMC-01, RWMC-02 AND RWMC-03
PROCESS (Col 1) Underground Septic System WASTE (Col 2) SANITARY WASTE

Col 4 What known/potential hazardous substances/constituents are associated with this waste or process?	Col 5 Potential sources associated with this hazardous material	Col 6 Estimated concentration of hazardous substances/ constituents mg/kg[a]	Col 7 Risk based concentration mg/kg[b]	Col 8 Qualitative risk assessment (Hi/Med/Lo)	Col 9 Overall reliability (Hi/Med/Lo)
Barium	contaminated soil	100	3.05E+03	Low	High
Methylethyl ketone (2-Butanone)	contaminated soil	0.84	1.12E+06	Low	High
m-Cresol	contaminated soil	9.8	1.90E+01	Low	High
p-Cresol	contaminated soil	9.8	1.75E+01	Low	High

a. See Question 7 for clarification of the technique used for estimating these maximum concentrations.

b. Column depicts the lowest risk based concentration from all of the septic systems and is therefore the "worst case". See Appendix B for further clarification.



* If sufficient data exist to identify an appropriate remedy

PROCESS: Underground Septic Systems

Question 1. What are the waste generation process locations and dates of operation associated with this site?

Answer:

The RWMC-01 (RWMC drainage and septic tank for WMF-613) contains a 1,250-gal septic tank made of concrete and a 75-ft. drain field constructed of 4-in. perforated sewer pipe. Waste generation process locations for the RWMC-01 septic system include four sinks, one floor drain, two urinals, four water closets, and one drinking fountain within WMF-613. It is assumed that the RWMC-01 septic system commenced operation when the construction of WMF-613 was completed in 1986. The RWMC-01 septic system is currently in operation (see Figure 1 and the process/waste worksheet).

RWMC-02 (RWMC septic tank and drain field for WMF-601, WMF-604, and WMF-620) has a 2,000-gal septic tank made of concrete and a 100-ft. drain field constructed of 4-in. perforated plastic drain tile. Waste generation process locations for the RWMC-02 septic system include waste lines from WMF-601, WMF-604, and WMF-620. WMF-601 contains two water closets, three sinks, and one floor drain in the shower. WMF-604 contains two sinks, three showers, two urinals, two water closets, one water fountain, and one floor drain. WMF-620 contains two sinks and two water closets. It is assumed that the RWMC-02 septic system commenced operation when the construction of WMF-601, the oldest building on this system, was completed in 1976. Waste lines from WMF-604 are assumed to have been tied in when construction of WMF-604 was completed in 1977. WMF-620 was tied into the RWMC-02 system in 1991. In 1986 the RWMC-02 drain field was replaced because the drain lines were clogged. The old drain field was excavated and later used as backfill over the new drain lines. Large pieces of basalt at the bottom of the old drain field were removed and hauled to a region west of the SDA known as the "wind gap". The new drain field was installed in the same location and has the following dates of operation: 1986 to present. The RWMC-02 septic system is currently in operation (see Figure 2 and the process/waste worksheet).

RWMC-03 (RWMC septic tank and drain field for WMF-610 and -617) has a 2,000-gal septic tank made of concrete and a 37.5-ft. drain field constructed of 4-in. perforated PVC pipes. Waste generation process locations for RWMC-03 septic system include waste lines from WMF-610 and WMF-617. WMF-610 contains one janitor sink, three water closets, four sinks, two urinals, three showers, and one drinking fountain. WMF-617 contains one water fountain, one urinal, one water closet, one shower, and one janitor sink. It is assumed that the RWMC-03 septic system commenced operation when construction of WMF-610, the oldest building on this system, was completed in 1985. WMF-617 is assumed to have been tied into the septic system in 1987 when its construction was completed. The RWMC-03 septic system is currently in operation (see Figure 3 and the process/waste worksheet).

How reliable is/are the information source/s? X High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Information regarding waste generation process locations was obtained from EG&G Idaho employees working at the RWMC who are familiar with the septic systems. Information regarding the dates of operation of the septic systems was obtained from a civil engineer[a] familiar with the septic system. Both of these information sources are considered reliable.

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Aside from this Track 1 investigation, the waste generation processes associated with the three septic systems were also considered when the Summary Assessments for RWMC-01, 02, and 03 were conducted under the COCA. The information in the Summary Assessments, discussions with personnel familiar with the systems, and the engineering drawings serves to validate the information regarding waste generation processes discussed in this question. Dates of operation are confirmed based on the assumption that the systems went into operation upon completion of the construction of the buildings which drain into them.

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[ ]	
Anecdotal	[X]	a	Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		QA data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[X]	3	D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[X]	4	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

[a] Personal communication with David Schiess, Civil Engineer, EG&G Idaho, on June 24, 1992.

PROCESS: UNDERGROUND SEPTIC SYSTEMS

Question 2. What are the disposal process locations and dates of operation associated with this site?

Answer:

The RWMC-01 septic system is located northwest of WMF-613. The RWMC-02 septic system is located northwest of WMF-601. The RWMC-03 septic system is located east of WMF-612. The locations of each septic system can be seen in Figures 1, 2, and 3 with reference made to Figure 4 to compare each septic system with the layout of the RWMC.

It is assumed the septic systems commenced operation after the construction of the oldest buildings they service was completed (see Question 1). The three septic systems have been receiving sanitary waste since they commenced operation. Following this rationale, the dates of operation are assumed to be:

RWMC-01: 1986 to present
RWMC-02: 1976 to present, except the period in 1986 when the drain field was replaced due to clogged drain lines.
RWMC-03: 1985 to present.

Note: The new drain field for the RWMC-02 septic system was installed in the same location. The dates of operation for this new drain field are from 1986 to today.

How reliable is/are the information source/s? X High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

The sources used to determine the disposal process locations, (i.e. the septic systems), consist of engineering drawings and discussions with RWMC personnel. Information regarding the dates of operation associated with the septic systems was obtained from a civil engineer familiar with the sites. These references are considered to be reliable.

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Sampling of the septic systems in 1991 verified the existence and general location of all three septic systems considered in this document. Dates of operation are confirmed based on the assumption that the systems went into operation upon completion of the construction of the buildings which drain into them.

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[X]	1
Anecdotal	[X]	a	Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		QA data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[X]	3	D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[ ]		Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

PROCESS: UNDERGROUND SEPTIC SYSTEMS

Question 3. Is there empirical, circumstantial, or other evidence of migration? If so, what is it?

Answer:

No empirical evidence of contaminant migration has been discovered during this Track 1 Investigation.

All three septic tanks were sampled in 1991 for radionuclides and TCLP constituents. No radiological contamination was detected and the TCLP analysis indicates that all TCLP constituents detected were below regulatory limits. Circumstantially, these constituents could potentially exist in the drain fields in concentrations at or below those in the septic tanks. This potential for migration would result from normal septic system processes which allow liquids to migrate from the septic tanks to the drain fields.

How reliable is/are the information source/s? X High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

No empirical evidence of migration has been found. However, due to the design of septic systems which allow liquids to move into the drain fields, the TCLP constituents found in the liquid samples in the tanks could be found in concentrations in the drain fields at or below the concentrations found in the tanks.

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

When the three septic systems were addressed under the COCA, no evidence of migration was found. All three systems received a score of zero using the Environmental Protection Agency's (EPA) Priority Scoring System in the Initial Assessments. Later, the Summary Assessments found no evidence that hazardous waste had entered any of the three septic systems. The three septic systems received authorization for closure in 1987 (see Appendix A) after the Summary Assessments were conducted. More recent sampling for radionuclides resulted in no radiological contamination being detected. As discussed above, migration from the septic tanks to the drain fields is possible due to the inherent design of septic systems. It is important to note that verifiable confirmation or denial of migration is not presently possible.

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]	Analytical data	[X] 1
Anecdotal	[ ]	Documentation about data	[ ]
Historical process data	[ ]	Disposal data	[ ]
Current process data	[ ]	QA data	[ ]
Areal photographs	[ ]	Safety analysis report	[ ]
Engineering/site drawings	[ ]	D&D report	[ ]
Unusual Occurrence Report	[ ]	Initial assessment	[X] 5
Summary documents	[X] 4	Well data	[ ]
Facility SOPs	[ ]	Construction data	[ ]
OTHER	[ ]		

PROCESS: UNDERGROUND SEPTIC SYSTEMS

Question 4. Is there evidence that a source exists at this site? If so, list the sources and describe the evidence.

Answer:

There is evidence that a source existed, in the past, at this site. Barium, methylethyl ketone, and m & p cresols were detected below the regulatory limits from the TCLP analysis conducted in 1991. However, all three septic systems have been pumped since the samples were taken and therefore the existence of a source can no longer be confirmed. No other evidence that a source exists at the site has been found.

How reliable is/are the information source/s? X High __Med __Low (check one)
EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Recent sampling from the septic systems showed no true-positive results for any radionuclides in any of the three systems, and TCLP constituents detected were below regulatory limits.[1] Although this indicates the existence of a source, subsequent pumping of the tanks serves to eliminate or minimize the source of contamination in the tanks. As discussed in Question 3, it is reasonable to assume contaminant migration has occurred from the tanks to the drain fields. However, this assumption can not be confirmed or denied and therefore the presence or absence of a source can not be determined. Given the worst case scenario and complete migration into the drain fields, the TCLP constituents would still be below regulatory limits and no radionuclides would be expected.

The gamma analysis performed would have detected all beta-emitting radionuclides except Sr-90. Since no Cs-137 was detected, the existence of Sr-90 is highly unlikely since Cs-137 and Sr-90 occur in almost a 1 to 1 ratio. The presence of manmade alpha-emitting radionuclides is also highly unlikely with no manmade gamma-emitting radionuclides being detected[b].

The following supplies were found in the janitors closet on a recent investigation of the RWMC: Ajax, Windex, Sanifresh hand cream, Spartan Sparcling restroom disinfectant, Wick deodorant, and Airlift Fresh Scent spray. All of these are common cleaning/sanitation supplies which are used throughout the country. Therefore a risk evaluation based on the janitorial supplies was not conducted because it was not considered to be a prudent expenditure of time and money. Further, not all of these supplies would be disposed of in the septic systems and those that are disposed of in the septic systems would be in very small concentrations relative to the volume of liquid which passes through the system daily.

[b] Personal communication with Dave Anderson, radiological expert, EG&G Idaho, on June 26, 1992.

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

When the three septic systems were addressed under the COCA, no evidence of a source at the site was found and the conclusion in the Summary Assessments was that no hazardous materials had entered the septic systems. The three septic systems later received authorization for closure in 1987 (see Appendix A). The recent sampling of the septic tanks serves to confirm the information regarding the existence of a source at this site. Prior to the pumping of the tanks a source did exist. However, because the tanks have been pumped since they were sampled, it is believed and reasonable to assume that the low levels of contamination found previously in the tanks have been removed.

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[X]	1
Anecdotal	[X]	b	Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		QA data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[ ]	
Summary documents	[X]	4	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

PROCESS: UNDERGROUND SEPTIC SYSTEMS

Question 5. Does site operating or disposal historical information allow estimation of the pattern of potential contamination? If the pattern is expected to be a scattering of hot spots, what is the expected minimum size of a significant hot spot?

Answer:

A pattern of potential contamination could exist within the septic systems and in the vicinity of the drain fields if a source exists. The pattern of potential contamination is not expected to be a scattering of hot spots because the liquids entering the drain field should distribute the effluent and contaminants in a decreasing pattern away from the perforated drain lines, not in isolated (i.e. scattered) areas.

How reliable is/are the information source/s? X High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

This information is based on the design of the septic systems (shown in the engineering drawings[5]) and the results of sampling. Septic systems by design allow liquids to exit the tank and enter the drain field. Liquids entering the drain fields disperse outward into the field and surrounding ground. Therefore, the volume of potentially contaminated liquid entering the drain field should be fairly evenly distributed as distance from the tank increases. This in turn means potential contamination is not expected to be located in isolated or scattered pockets. Further, TCLP constituents were detected below regulatory limits and no true-positive results for any radionuclides occurred. This serves to reinforce the reasoning that a scattering of hot spots is not expected to exist. The pattern of potential contamination associated with a septic tank would be a diffusing plume centered around the perforated pipe, not a scattering of hot spots.

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

INEL personnel familiar with the septic systems agree that if the septic systems were contaminated, a hot spot could occur in the septic tanks and in the vicinity of the drain fields.[c] However, multiple hot spots would not be expected.

In addition, all three systems were addressed under the COCA and received authorization for closure, indicating the presence of significant contamination was not verified. This serves to reinforce the assumption that a scattering of hot spots is not expected.

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[X]	1
Anecdotal	[X]	c	Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		QA data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[X]	3	D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[X]	5
Summary documents	[X]	4	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

[c] Personal communication with Sean French, RWMC Environmental Engineer, on June 9, 1992.

PROCESS: UNDERGROUND SEPTIC SYSTEMS

Question 6. Estimate the length, width, and depth of the contaminated region. What is the known or estimated volume of the source? If this is an estimated volume, explain carefully how the estimate was derived.

Answer:

The drain fields are not known to be contaminated. However, for the purpose of the risk evaluation (see Appendix B), the estimates given in this answer include potentially contaminated soil in the drain fields. The estimates are as follows:

RWMC-01 = 1 yd x 8 yd x 75 ft = 200 yd^3
RWMC-02 = 1 yd x 4 yd x 100 ft = 133.4 yd^3
RWMC-03 = 1 yd x 7 yd x 37.5 ft = 87.5 yd^3

The depth of influence is estimated to be 1 yd deep and the width of influence is estimated to be 1 yd wide based on the BORAX-03 Track 1, for OU 6-02, which assumed a cross section of 1 yd^2. This assumption seems reasonable given the nature of these drain fields (i.e. 4-in sewer pipe surrounded with approximately 2 feet of fill materials). The width is further multiplied by the number of pipes in the drain field to determine the maximum potentially contaminated area. The lengths, taken from the engineering drawings, are the lengths of the pipes in the drain field. The estimated volume of the source as it relates solely to the tanks, could be as high as 1250 gal, 2000 gal, and 2000 gal for RWMC -01, -02, and -03 respectively. However, since the tanks have been pumped there is no longer believed to be a source associated with the tanks.

How reliable is/are the information source/s? X High __Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

It is not known whether the drain fields are contaminated. Based on the low level of contaminants detected in the tanks and the fact that the tanks have been pumped, it is believed they are not contaminated or are contaminated at very low levels, well below action levels. This hypothesis can not be confirmed or denied however. Previous sampling[1] from the septic tanks indicated no true-positive results for any radionuclides, and TCLP constituents detected were below regulatory limits. The volumes stated in the answer to this question are estimates of potentially contaminated soil in the drain fields and are based on the BORAX-03 Track 1 which assumed a cross section of 1 yd^2. The volumes of the septic tanks are highly reliable because this data has been taken directly from engineering drawings. (See the contaminant worksheet for a summary of the risk evaluation results which indicate the septic systems do not pose a significant risk).

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

Volumes of the septic tanks have been confirmed based on engineering drawings. The estimated volumes of the drain fields can not be completely validated because it was necessary to make assumptions regarding the area of influence surrounding the piping. However, these estimates are considered reasonable and are based on the approach used in the BORAX-03 Track 1 which has been reviewed by EG&G Idaho personnel for technical accuracy. No evidence of a contaminated region was found when the three septic systems were addressed in both the Initial Assessments and the Summary Assessments under the COCA. All three septic systems received authorization for closure in 1987 (see Appendix A). Recent sampling for radionuclides in 1991 also resulted in no evidence of radiological contamination.[1] Therefore the previous volumes are thought to represent the maximum extent of the potential contamination.

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[X]	1
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		QA data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[X]	3	D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[X]	5
Summary documents	[X]	4	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

PROCESS: UNDERGROUND SEPTIC SYSTEMS

Question 7. What is the known or estimated quantity of hazardous substance/constituent at this source? If the quantity is an estimate, explain carefully how the estimate was derived.

Answer:

Methylethyl ketone, and m & p cresols were detected in the liquid samples below the regulatory limits from the TCLP analysis conducted in 1991 at 0.042 mg/L and 0.49 mg/L respectively. Barium was detected at 5 mg/L in a solid sample also below the regulatory limit. The equivalent soil concentrations of the TCLP constituents are estimated to be 100 mg/kg (barium), 9.8 mg/kg (m & p cresols), 0.84 mg/kg (methylethyl ketone). These concentrations in soil are estimated from the TCLP data based on a conversion as outlined in the reasoning section of this question and are referenced in the confirmation section of this question (see Appendix C). The estimated maximum volumes of each septic system are found in Question 6.

How reliable is/are the information source/s? __High X Med __Low (check one)
EXPLAIN THE REASONING BEHIND THIS EVALUATION.

The concentrations discussed above were estimated using the following equation: soil concentration = (TCLP result mg/L)x(2.0 L leachate)/(0.1 kg solid sample).

This method has been used in other Track 1 investigations and is referenced in the confirmation section of this question.

The maximum detected TCLP concentration from the liquid samples were as follows:
m & p cresols = 0.49 mg/L
Methylethyl ketone = 0.042 mg/L.

Using the equation above, the following soil concentrations were calculated in mg/kg:
100 (barium)
9.8 (m & p cresols)
0.84 (methylethyl ketone)

Barium was not detected in the liquid samples. The maximum concentration detected from the solid samples was 5 mg/L. It is important to note that the solid material in the septic tank is not likely to migrate from the septic tanks to the drain fields based on the inherent design and processes of a septic system. Therefore, it is expected that barium was removed from the tanks during the pumping process and did not migrate into the drain fields. (See the contaminant worksheet for a summary of the risk evaluation results).

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

This method for calculating original concentration data from TCLP data was suggested by Frank Calovini of the EPA Office of Solid Waste Method Information Communication Exchange (see Appendix C). It has also been used in other Track 1 reports to assist with the evaluation of existing TCLP data since there is no direct correlation between TCLP results and risk based concentrations of contaminants.

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]	Analytical data	[X] 1
Anecdotal	[ ]	Documentation about data	[ ]
Historical process data	[ ]	Disposal data	[ ]
Current process data	[ ]	QA data	[ ]
Areal photographs	[ ]	Safety analysis report	[ ]
Engineering/site drawings	[ ]	D&D report	[ ]
Unusual Occurrence Report	[ ]	Initial assessment	[ ]
Summary documents	[ ]	Well data	[ ]
Facility SC[illegible]	[ ]	Construction data	[ ]
OTHER	[ ]		

PROCESS: UNDERGROUND SEPTIC SYSTEMS

Question 8. Is there evidence that this hazardous substance/constituent is present at the source as it exists today? If so, describe the evidence.

Answer:

Barium, methylethyl ketone, and m & p cresols were detected in 1991 below the TCLP regulatory limits. However, all three septic systems were pumped in 1991 after the samples were taken. No other evidence that hazardous substances are present in the septic system or drain fields has been found. Since the tanks have been pumped, it is assumed the barium, methylethyl ketone, m & p cresols once detected in the tanks are no longer present. Circumstantial evidence indicates it is possible to have hazardous constituents in the drain fields. However, this supposition cannot be confirmed or denied.

How reliable is/are the information source/s? __High X Med __Low (check one)

EXPLAIN THE REASONING BEHIND THIS EVALUATION.

Previous sampling[1] from the septic tanks indicated no radiological contaminants are present and TCLP constituents were below regulatory limits. RWMC operations personnel have verified the tanks were pumped and therefore the hazardous constituents previously present in the tanks are assumed to have been removed. Information concerning the presence of contaminants in the drain fields does not exist and only unverifiable assumptions can be made regarding the drain fields. Based on all the information presented in this report, it seems reasonable to assume that these septic systems are no different than any other septic system that receives sanitary waste. Therefore, it is not expected that these three systems contain hazardous constituents at a concentration high enough to warrant further consideration.

Has this INFORMATION been confirmed? X Yes __No (check one)

IF SO, DESCRIBE THE CONFIRMATION.

The information concerning the earlier existence of the three listed contaminants was confirmed by sampling. Since the tanks have been pumped, it is assumed that all or most of the contaminants have been removed. Therefore, there is no evidence that supports the continued presence of contaminants in the septic tanks.

There is no evidence to support or deny the existence of contamination in the drain fields. However, it is assumed the majority of contaminants would remain in the septic tanks, which have been pumped. Therefore, a high concentration of contaminants in the drain fields, relative to the levels detected in the septic tanks, is not expected. No evidence of disposal of hazardous substances into the septic systems was found when the three septic systems were addressed under the COCA. All three septic systems received authorization for closure in 1987 (see Appendix A). More recent sampling for radionuclides detected no radiological contamination and no TCLP constituents above regulatory limits.[1]

SOURCES OF INFORMATION (check appropriate box/es & source number from reference list)

No available information	[ ]		Analytical data	[X]	1
Anecdotal	[ ]		Documentation about data	[ ]	
Historical process data	[ ]		Disposal data	[ ]	
Current process data	[ ]		QA data	[ ]	
Areal photographs	[ ]		Safety analysis report	[ ]	
Engineering/site drawings	[ ]		D&D report	[ ]	
Unusual Occurrence Report	[ ]		Initial assessment	[X]	5
Summary documents	[X]	4	Well data	[ ]	
Facility SOPs	[ ]		Construction data	[ ]	
OTHER	[ ]				

REFERENCES

1. Robert Monson, EG&G Idaho, Inc., Engineering Design File RWMC-505, September 26, 1991.

2. Code of Federal Regulations, 40 CFR 261.24, "Toxicity Characteristic," Office of the Federal Register, March 1990: Table 1, Maximum Concentration of Contaminants for the Toxicity Characteristic.

3. EG&G Idaho Drawings 1375-BGF-601-P-1, 410229, 169878, 163322, and 167646.

4. Summary Assessments for RWMC-01, 02, and 03.

5. Initial Assessments for RWMC-01, 02, and 03.

APPENDIX A

AUTHORIZATION FOR CLOSURE OF RWMC-01, -02, AND -03 UNDER THE COCA

U.S. ENVIRONMENTAL PROTECTION AGENCY
REGION 10
1200 SIXTH AVENUE
SEATTLE, WASHINGTON 98101

AUG 25 1987

REPLY TO ATTN OF HW-112

W.H. SULLIVAN RECEIVED
JUN 23 1991
Action to
Action Due Date
Info Copies
Route/File

U.S. Department of Energy
Idaho Operations Office
785 DOE Place
Idaho Falls, Idaho 83402
Attn. Hunter Weiler

RECEIVED
AUG 31 1987
ASSISTANT MANAGER FOR NUCLEAR PROGRAMS

Re: Summary Assessment Review

Dear Mr. Weiler:

We have reviewed the summary assessments for the following solid waste management units:

EBR-02	EBR-1 Septic Tank & Seepage Pit
EBR-03	EBR-1 Seepage Pit
EBR-04	EBR-1 Septic Tank
EBR-05	EBR-1 Cesspool, Septic Tank & Seepage Pit
EBR-06	EBR-1 Septic Tank & Seepage Pit
~~RWMC-01~~	~~RWMC Drainage & Septic Tank~~
RWMC-02	RWMC Septic Tank & Drain Field
~~RWMC-03~~	~~RWMC Septic Tank & Drainfield for SNEAP~~
TRA-08	TRA Cold Waste Disposal Pond
TRA-10	MTR Construction Excavation Pile
TRA-13	TRA Final Sewage Leech Ponds
TRA-23	TRA ETR Excavation Site Rubble Pile
~~TRA-25~~	~~TRA Sewer Plant Settling Pond Rubble Pile~~ 1/s/ee
TRA-26	TRA Rubble Site by USGS Observation Well
~~TRA-28~~	~~TRA North Rubble Site~~ 1/s/ee
~~TRA-29~~	~~TRA ATR Construction Rubble~~ 1/s/ee
TRA-30	TRA BETA Building Rubble Site
TRA-32	TRA West Road Rubble Pile
TRA-33	TRA West Staging Area/Drainage Ditch Site

Each summary provided for each of the above listed sites provide a good review of the available information on which Idaho National Engineering Laboratory (INEL) has based its proposal to delete these solid waste management units (SWMU's) from the universe. For EBR-02, EBR-03, EBR-04, EBR-05, EBR-06, RWMC-01, RWMC-02, and RWMC-03, each of these SWMU's are reported (and applicable engineering drawings are referenced) to have been sanitary septic tanks or drain fields connected exclusively to lavatories, lunchrooms and water fountains. Also included in each summary is an evaluation of cleaning solvents used by janitorial personnel identifying that this material would not represent a hazardous constituent loading to each unit.

TRA-08 is depicted as a disposal pond constructed in 1982. It is described as receiving cold drains from laboratories along with steam plant blowdown and cooling tower blowdown. The summary provided is inadequate to base a decision to delete this unit from the universe. A grab sample of sediment near the inlet to the pond may be necessary if additional information cannot be collected on chemicals used in the laboratories which may have accidently been discharged. Analysis of the sample would be for hazardous constituents.

TRA-10 is recommended for deletion because it received demolition debris. No interviews were reported as being conducted of personnel directly familiar with the unit. No basis is given for the position that no hazardous constituents are present other than it was against policy. The site observation described may in itself be sufficient if it were better described and included an examination of the entire thickness of waste deposited. If not, it may be necessary to supplement this information with a test excavation or magnetometer or EM survey to identify if tanks or containers are among the disposed items in the fill.

TRA-13 is a leach pond and is recommended for deletion by INEL based on no evidence being discovered that hazardous constituents entered the system. However, the potential sources using the system are not clearly identified and therefore, there is insufficient information on which to base a decision for deletion. Reference to engineering drawings which can be checked should be provided documenting that only lavatories, lunchrooms or water fountains are connected, if this is the case.

TRA-23 is another construction rubble pile and our comments for TRA-10 apply.

TRA-24 is another construction rubble pile and our comments for TRA-10 apply.

TRA-25 is a settling pond rubble pile which was created from the excavation of the settling ponds at TRA. As the pile is supposed to only contain soil it would be simple to confirm this fact by conducting a magnetometer or EM survey over the area. If the initial conclusion is verified this site could be deleted from the universe.

TRA-26 is a construction pile of unknown origin and our comments concerning TRA-10 apply.

TRA-28 is a general construction rubble pile and our comments for TRA-10 apply.

TRA-29 is another rubble pile and our comments for TRA-10 apply.

TRA-30 is a rubble pile containing general debris and our comments for TRA-10 apply.

TRA-32 is a rubble pile containing general debris and our comments for TRA-10 apply.

TRA-33 is a rubble site created from the construction of security devices. It is identified that this pile was of recent origin but dates of deposit are not provided. If this pile were created in the last year and is only from soil and pavement removal, this information should be provided and the unit can be deleted from the universe.

In summary, the summary assessments provided are a significant improvement from those we commented on in our May 21, 1987, correspondence. The summary assessments provided for EBR-02, EBR-03, EBR-04, EBR-05, EBR-06, RWMC-01, RWMC-02, and RWMC-03 are sufficient to support the deletion of these eight (8) units from the universe. In accordance with Paragraph D.1(a) of Appendix I to the Consent Order and Compliance Agreement ("Agreement"), we concur with the findings of the above identified summary assessments. In accordance with Paragraph D.1(b) of the Agreement we have identified additional information needs for: TRA-08; TRA-10; TRA-13; TRA-23; TRA-24; TRA-25; TRA-26; TRA-28; TRA-29; TRA-30; TRA-32; and TRA-33.

Please contact Wayne Pierre of my staff at (206) 442-7261 if you would like to discuss these comments.

Sincerely,

Kenneth D. Feigner, Chief
Waste Management Branch

cc: Cheryl Koshuta, IDHW